In the Claims

1. (Currently amended) A method for immobilizing an anti-thrombogenic material into a coating comprising a base coat layer posited on a surface of an implantable medical device for use within a mammalian body, comprising:

preparing a base coat mixture comprising a binding material, a grafting material, a photoinitiator, and a solvent;

applying the base coat mixture directly to the implantable medical device;

polymerizing the base coat mixture to form the base coat layer on the medical device by photopolymerization;

applying a formulation comprising the anti-thrombogenic material to the surface of the base coat layer; and

immobilizing the anti-thrombogenic material directly to chemically functional groups in the binding material within the base coat layer on the surface of the medical device,

wherein the binding material of the base coat layer is selected from the group consisting of ~~oxirane compounds, and~~ acetoacetoxy compounds, and

wherein the anti-thrombogenic material is selected from the group consisting of glycosaminoglycans, superoxide dismutase mimetic (SODm), and combinations thereof.

2. (Original) The method of claim 1, wherein the medical device is a stent.

3. (Original) The method of claim 1, wherein the base coat mixture is applied to the outside surface of the medical device.

4. (Canceled)

5. (Canceled)

6. (Canceled)

7. (Previously presented) The method of claim-1, wherein the grafting material of the base coat layer is selected from the group consisting of vinyl, acrylate and allyl compounds.

8. (Original) The method of claim 7, wherein the grafting material of the base coat layer is polyurethane acrylate.

9. (Original) The method of claim 7, wherein the grafting material of the base coat layer is polymerized by irradiating the grafting material with ultra-violet (UV) radiation for about eight to ten minutes.

10. (Previously presented) The method of claim 1, wherein the solvent is selected from the group consisting of ester and ketone compounds.

11. (Previously presented) The method of claim 1, wherein the anti-thrombogenic agent comprises heparin.

12. (Previously presented) The method of claim 11, wherein heparin is immobilized by a reaction between an aqueous heparin solution and chemically functional groups within the base coat layer on the surface of the medical device.

13. (Original) The method of claim 12, wherein the aqueous heparin solution is selected from the group consisting of unfractionated heparin and N partially desulfated heparin.

14. (Original) The method of claim 13, wherein the reaction between the aqueous heparin solution and the chemically functional groups within the base coat layer runs for about eighteen to twenty-four hours at a temperature in the range of 15°C to 80°C and about pH 7.0.

15. (Currently amended) A method for end-immobilizing an anti-thrombogenic material into a coating comprising a base coat layer posited on a surface of an implantable medical device for use within a mammalian body, comprising:

preparing a base coat mixture comprising a binding material, a grafting material, a photoinitiator, and a solvent;

applying the base coat mixture directly to the implantable medical device;

polymerizing the base coat mixture to form the base coat layer on the medical device by photopolymerization;

applying a formulation comprising the anti-thrombogenic material to the surface of the base coat layer; and

end-immobilizing the anti-thrombogenic material, through a group that terminates the anti-thrombogenic material, directly to chemically functional groups in the binding material within the base coat layer on the surface of the medical device

wherein the binding material of the base coat layer is selected from the group consisting of ~~oxirane compounds, and~~ acetoacetoxy compounds, and

wherein the anti-thrombogenic material is selected from the group consisting of glycosaminoglycans, superoxide dismutase mimetic (SODm), and combinations thereof.

16. (Previously presented) The method of claim 15, wherein the anti-thrombogenic material ~~is~~ further comprises heparin.

17. (Previously presented) The method of claim 16, wherein heparin is end-immobilized by a re-action between an amine-terminated heparin and chemically functional groups within the base coat layer on the surface of the medical device.

18. (Original) The method of claim 17, wherein the reaction between amine-terminated heparin and chemically functional groups within the base coat layer runs for about eighteen to twenty-four hours at a temperature in the range of 15°C to 80°C and about pH 7.0.

19. (Withdrawn) A method for immobilizing an anti-thrombogenic material into a coating posited on a surface of an implantable medical device for use within a mammalian body, comprising:

preparing a base coat mixture for application to the surface of the medical device; polymerizing the base coat mixture to form a base coat layer on the medical device;

performing a reaction between the base coat layer and excess amine-terminated polyethylene glycol;

rinsing the base coat layer with water; and

performing a reaction between the anti-thrombogenic material and amine-terminated polyethylene glycol on the surface of the medical device, and

wherein the anti-thrombogenic material is selected from glycosaminoglycans, superoxide dismutase mimetic (SODm), and combinations thereof.

20. (Withdrawn) The method of claim 18, wherein the reaction between the excess amine-terminated polyethylene glycol and the chemically functional groups within the base coat layer runs for about eighteen to twenty-four hours at a temperature in the range of 15°C to 80°C and about pH 7.0.

21. (Withdrawn) The method of claim 20, wherein the excess amine-terminated polyethylene glycol is $PEG(NH_2)_2$.

22. (Withdrawn) The method of claim 21, wherein the concentration of $PEG(NH_2)_2$ is about 0.0lmg/ml to 20mg/ml.

23. (Withdrawn) The method of claim 19, wherein after completion of the reaction between the excess amine-terminated polyethylene glycol and the chemically functional groups within the base coat layer, the medical device is rinsed with water.

24. (Withdrawn) The method of claim 19, wherein the anti-thrombogenic material ~~is~~ further comprises unfractionated heparin.

25. (Withdrawn) The method of claim 24, wherein unfractionated heparin is reacted with amine-terminated polyethylene glycol and a water-soluble carbodiimide on the surface of the medical device for the immobilization of heparin thereon.

26. (Withdrawn) The method of claim 25, wherein the reaction between unfractionated heparin and amine-terminated polyethylene glycol with a water soluble carbodiimide on the surface of the medical device runs for about two to six hours at about room temperature and about pH 4.5 to 7.5.

27. (Withdrawn) The method of claim 19, wherein the anti-thrombogenic material further comprises N desulfated heparin.

28. (Withdrawn) The method of claim 27, wherein N desulfated heparin is reacted with amine-terminated polyethylene glycol and a water-soluble carbodiimide on the surface of the medical device for the immobilization of heparin thereon.

29. (Withdrawn) The method of claim 28, wherein the reaction between N desulfated heparin and amine-terminated polyethylene glycol with a water soluble car-bodiimide on the surface of the medical device runs for about two to six hours at about room temperature and about pH 4.5 to 7.5.

30. (Withdrawn) A method for immobilizing an anti-thrombogenic material into a coating posited on a surface of an implantable medical device for use within a mammalian body, comprising:

preparing abase coat mixture for application to the surface of the medical device;

polymerizing the base coat mixture to form a base coat layer on the medical device; and

performing a reaction between a coupling solution and chemically functional groups within the base coat layer of the device surface, and

wherein the anti-thrombogenic material is selected from glycosaminoglycans, superoxide dismutase mimetic (SODm), and combinations thereof.

31. (Withdrawn) The method of claim 30, wherein the coupling solution is heparin and OH PEG NH_2.

32. (Withdrawn) The method of claim 31, wherein the concentration of the coupling solution is about 0.01mg/ml to 20mg/ml.

33. (Withdrawn) The method of claim 31, wherein the reaction between the coupling solution and chemically functional groups within the base coat layer runs for about eighteen to twenty-four hours at a temperature in the range of 15°C to 80°C and about pH 8.0.

34. (Currently amended) A method for immobilizing an anti-thrombogenic material into a coating comprising a base coat layer posited on a surface of an implantable medical device for use within a mammalian body, comprising:

preparing a base coat mixture comprising a binding material, a grafting material, a photoinitiator, and a solvent;

applying the base coat mixture directly to the implantable medical device;

polymerizing the base coat mixture to form the base coat layer on the medical device by photopolymerization;

applying a formulation comprising the anti-thrombogenic material to the surface of the base coat layer; and

immobilizing the anti-thrombogenic material directly to chemically functional groups in the binding material within the base coat layer on the medical device,

wherein the binding material of the base coat layer is selected from the group consisting of ~~oxirane compounds, and~~ acetoacetoxy compounds, and

wherein the anti-thrombogenic material ~~is~~ comprises a superoxide dismutase mimetic (SODm), and heparin.

35. (Withdrawn and) The method of claim 34, wherein the anti-thrombogenic material comprises surfactant-bound heparin.

36. (Withdrawn) The method of claim 35, wherein the surfactant-bound heparin includes at least one of benzalkonium heparin and TDMA-heparin.

37. (Withdrawn) The method of claim 35, wherein the surfactant-bound heparin is immobilized by a reaction with cinnamaldehyde on the surface of the medical de-vice.

38. (Withdrawn) The method of claim 37, wherein the reaction between the surfactant-bound heparin and chemically functional groups within the base coat layer on the surface of the medical device runs for about eighteen to twenty-four hours at a temperature in the range of 15°C to 80°C and about pH 7.0.

39. (Withdrawn) A method for immobilizing an anti-thrombogenic material into a coating posited on a surface of an implantable medical device for use within a mammalian body, comprising:

preparing a base coat mixture for application to the surface of the medical device;

polymerizing the base coat mixture to form a base coat layer on the surface of the medical device;

immobilizing the anti-thrombogenic material directly to chemically functional groups within the base coat layer on the surface of the medical de-vice; and

performing a carbodiimide-mediated reaction to form an amide linkage to a chemical chain of the anti-thrombogenic material attached to the base coat layer,

wherein the anti-thrombogenic material is selected from glycosaminoglycans, superoxide dismutase mimetic (SODm), and combinations thereof.

40. (Withdrawn) The method of claim 39, wherein the anti-thrombogenic material further comprises heparin.

41. (Withdrawn) The method of claim 40, wherein the carbodiimide reaction is between Superoxide dismutase mimetic (SODm) and heparin.

42. (Withdrawn) The method of claim 41, wherein SODm is grafted to the chemical chain of heparin through the carbodiimide reaction.

43. (Withdrawn) The method of claim 41, wherein SODm is reacted with heparin and EDC at about room temperature and about pH 7.0 for about four hours.

44. (Withdrawn) The method of claim 43, wherein heparin includes an aqueous heparin solution.

45. (Withdrawn) The method of claim 40, wherein the carbodiimide-reacted anti-thrombogenic material includes SODm heparin.

46. (Withdrawn) The method of claim 45, wherein SODm heparin is end-immobilized in a reaction with chemically functional groups of the base coat layer on the surface of the medical device.

47-79. (Canceled).